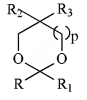
AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for enhancing chemical digestion, chemical alteration or a combination thereof of a biomolecule comprising contacting the biomolecule with a surfactant represented by formula I:



(I)

in which

p is 0, 1or 2;

R is alkyl;

R_1 and R_2 are each, independently, hydrogen or methyl; and

R_3 is selected from $-OSO_3^-$, $-R_4OSO_3^-$, $-R_4OR_5SO_3^-$, and $-OR_5SO_3^-$,

wherein R_4 and R_5 are each, independently, lower alkyl; and

wherein the biomolecule is selected from the group consisting of a protein and a peptide,

to thereby enhance chemical digestion, chemical alteration or a combination thereof of the biomolecule

and wherein the chemical alteration is selected from the group consisting of alkylation, reduction, and a combination thereof.

.

2. (Canceled)

3. (Previously presented) The method of claim 1, further comprising analyzing the biomolecule following chemical digestion, chemical alteration or a combination thereof.

4. (Previously presented) The method of claim 1, wherein the biomolecule is contained in a biological sample.

5. (Original) The method of claim 4, wherein the biological sample is selected from the group consisting of inclusion bodies, biological fluids, biological tissues, biological matrices, embedded tissue samples, and cell culture supernatants.

6. (Canceled)

7. (Original) The method of claim 6, wherein the biomolecule is selected from the group consisting of a lipophilic protein, a receptor, a proteolytic protein, and a membrane-bound protein.

8. (Original) The method of claim 3, wherein the analysis is selected from the group consisting of solid phase extraction, solid phase micro extraction, electrophoresis, mass spectrometry, liquid chromatography, liquid-liquid extraction, membrane extraction, soxhlet extraction, precipitation, clarification, electrochemical detection, staining, elemental analysis, Edmund degradation, nuclear magnetic resonance, infrared analysis, flow injection analysis, capillary electrochromatography, ultraviolet detection, and combinations thereof.

9. (Original) The method of claim 8, wherein the mass spectrometry is surface desorption ionization mass spectrometry.

10. (Canceled)

11. (Original) The method of claim 9, wherein the surfactant is degraded prior to analysis.

12. (Canceled)

13. (Previously presented) The method of claim 1, wherein chemical digestion of the biomolecule is enhanced.

14. (Original) The method of claim 13, further comprising contacting the biomolecule with a protease, CNBr, or hydroxylamine.

15. (Original) The method of claim 13, further comprising separating the resulting biomolecule fragments.

16. (Original) The method of claim 14, wherein the protease is immobilized.

17. (Previously presented) The method of claim 14, wherein the protease is selected from the group consisting Trypsin, Chymotrypsin, Lys-C, V8 protease, AspN, Arg-C, Clostripain, Pepsin, and Papain.

18. (Previously presented) The method of claim 9, wherein chemical alteration of the biomolecule is enhanced.

19. (Canceled)

20. (Previously presented) The method of claim 1, wherein the chemical digestion or chemical alteration provides a favorable chemical property.

21. (Previously presented) The method of claim 20, wherein the favorable chemical property is selected from the group consisting of a more complete reaction, increased efficiency, increased yield, and increased rate.

22. (Previously presented) The method of claim 1, wherein the chemical reaction comprises denaturing the biomolecule.

23. (Original) The method of claim 1, further comprising degrading the surfactant after the chemical reaction.

24. (Original) The method of claim 23, wherein the surfactant is degraded by contact with an acidic solution.

25. (Original) The method of claim 1, wherein the surfactant is represented by formula II:

(II)

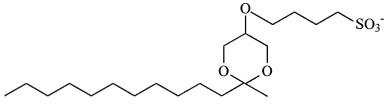
in which

R_6 is alkyl;

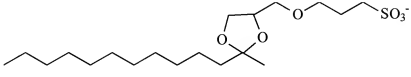
R_7 is selected from $-OSO_3^-$, $-R_4OSO_3^-$, $-R_4OR_5SO_3^-$, and $-OR_5SO_3^-$,

wherein R_4 and R_5 are each, independently, lower alkyl.

26. (Original) The method of claim 1 wherein the surfactant has the following chemical structure:



27. (Original) The method of claim 1 wherein the surfactant has the following chemical structure:



28. (Previously presented) The method of claim 1 wherein enhancement of the chemical digestion, chemical alteration or combination thereof facilitates on-line automation, separation, mass spectrometric analysis, or a combination thereof.

29. (Previously presented) The method of claim 1 wherein the chemical digestion, chemical alteration, or combination thereof, is performed under microscale conditions.

30. (Original) The method of claim 13 wherein the digestion occurs in an electrophoretic gel.

31. (Withdrawn) The method of claim 30 wherein the digestion occurs in the presence one or more surfactants that are different from the surfactant in Formula I.

32. (Withdrawn) The method of claim 31 wherein the digestion occurs in the presence of SDS.

33. (Previously Presented) The method of claim 13 wherein the digestion occurs in the absence of SDS.

Claims 34-64. (Canceled)

65 (Withdrawn) A kit for enhancing a chemical reaction of a molecule comprising:
a surfactant represented by formula I:

(I)

in which
p is 0, 1or 2;
R is alkyl;
R_1 and R_2 are each, independently, hydrogen or methyl; and
R_3 is selected from $-OSO_3^-$, $-R_4OSO_3^-$, $-R_4OR_5SO_3^-$, and $-OR_5SO_3^-$,
wherein R_4 and R_5 are each, independently, lower alkyl; and instructions for use.

Claims 66-112. (Canceled)

113. (Withdrawn) A method for enhancing chemical digestion of a biomolecule comprising:
contacting the molecule with a digestive enzyme and a surfactant represented by formula I:

(I)

in which

p is 0, 1or 2;

R is alkyl;

R_1 and R_2 are each, independently, hydrogen or methyl; and

R_3 is selected from $-OSO_3^-$, $-R_4OSO_3^-$, $-R_4OR_5SO_3^-$, and $-OR_5SO_3^-$,

wherein R_4 and R_5 are each, independently, lower alkyl;

to thereby enhance the chemical digestion of the molecule.

Claims 114-116. (Canceled)

117. (Withdrawn) A kit for enhancing chemical digestion of a biomolecule comprising: a surfactant represented by formula I:

(I)

in which

p is 0, 1or 2;

R is alkyl;

R_1 and R_2 are each, independently, hydrogen or methyl; and

R_3 is selected from $-OSO_3^-$, $-R_4OSO_3^-$, $-R_4OR_5SO_3^-$, and $-OR_5SO_3^-$,

wherein R_4 and R_5 are each, independently, lower alkyl; and instructions for use.

Claims 118-122. (Canceled)

123. (Previously presented) The method of claim 1, wherein the biomolecule is selected from bovine serum albumin, lysozyme, ovalbumine, myoglobin, ubiquitin, and bacteriorhodopsin.